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ABSTRACT

Presented is one of a series of resource guides designed to provide students with an improved mathematics program. This guide emphasizes real-life situations focusing on the operation of a store. Classes are divided into grocery, meat, produce, drugs, and hardware sections at the beginning of the course. Students learn how to organize, collect, and use data as they work through the program. Topics covered include the purchasing and pricing of goods, bookkeeping, tabulating expenses, and finding individual student grade averages at the completion of the course. The bulk of this document is a collection of worksheets designed to help students through individual mathematics laboratory experiences. The intent is to provide teachers with materials and guidelines to structure a course for secondary students that develops basic mathematical skills and concepts through application of "operating a store" experiences. (MP)

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SELECTED MATHEMATICS APPLICATIONS (LEVEL A)

Operating A Store

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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SE 033 924

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FOREWORD

In 1978 the Mathematics Program Guide, K-12 was developed and disseminated to all public schools in Hawaii "to provide direction for teachers and administrators in the development of school-level mathematics." One of the major outcomes of this effort was a substantial strengthening of the quantity and quality of the secondary mathematics program. Existing courses in grades 9-12 were restructured and several new courses were created. Selected Mathematics Applications (Levels A and B) is a series of new courses which are designed to emphasize development of basic mathematics skills and concepts in the areas of arithmetic, geometry, measurement, and problem-solving through application to "real-life" situations such as business, consumerism, industry, and the trades.

This document is one of a series of Selected Mathematics Applications course guides. In this guide the real-life situation of "operating a store" will provide students with numerous opportunities to develop an in-depth knowledge of mathematical concepts and skills in the aforementioned areas. Applications to the general management of a store, purchasing and pricing of goods, bookkeeping, and accounting for expenses and profits will furnish topics for these opportunities.

The intent of this course guide is to provide teachers with guidelines and materials in order to structure a course that would teach students mathematical content through the application to "Operating A Store".

Charles G. Clark
Superintendent of Education

ACKNOWLEDGMENT

We gratefully acknowledge those teachers who critically evaluated the draft manuscript of this Guide. Their suggestions for improvement of the Guide are appreciated.

Special recognition is extended to Elizabeth Brown, Mathematics Teacher, Waialua High School, who developed and piloted the draft of this course guide.

TABLE OF CONTENTS

	Pages
FOREWORD	i
ACKNOWLEDGMENT	ii
INTRODUCTION	1
ORGANIZATION	1
UNIT I - ORIENTATION	5
UNIT II - PURCHASING AND PRICING OF GOODS	17
A. Learner Objectives	17
B. Selection of Goods	17
C. Location of Wholesale Vendors	29
D. Pricing the Goods	32
E. Measuring the Goods	40
UNIT III - BOOKKEEPING	49
A. Learner Objectives	49
B. Banking Procedures	49
C. Accounts Receivable	62
D. Accounts Payable	64
UNIT IV - EXPENSES	74
A. Learner Objectives	74
B. Payroll	74
C. Taxes	86
D. Insurance	89
UNIT V - SUMMARIZATION	94
BIBLIOGRAPHY	97

INTRODUCTION

This course guide uses the business point of view approach to develop basic mathematics skills and concepts. To initiate activities in the course, teachers should divide the class into four departments -- GROCERY, MEAT, PRODUCE, and DRUGS AND HARDWARE -- by having each student select a department. Depending on class size, guide the student selections so that the departments will have approximately equal numbers of students. Learning activities for each department will follow the guidelines outlined by the units in this guide.

While working through this guide, keep in mind the eight Foundation Program Objectives and the fifteen Essential Competencies that are the guidelines for developing the educational program of the State of Hawaii. Make good use of community resources, the newspaper, and the telephone directory.

Listed below is a suggested time frame that can be used for the course.

Unit I - Orientation, 1 week

Unit II - Purchasing and Pricing of Goods, 6 weeks

Unit III - Bookkeeping, 5 weeks

Unit IV - Expenses, 5 weeks

Unit V - Summarization, 1 week

ORGANIZATION

The guide contains five units. Each unit lists the learner objectives from the Mathematics Program Guide that pertain to that unit. (A summary of learner objectives and their matching units appears in Table I.) Every unit except for the Orientation and the Evaluation units is broken into sections which may include review of necessary computational skills covered in that

particular section, resources for that section, and suggested activities for that section. Most of the activities will be research-suggested homework assignments utilizing community resources. Other activities will pertain to the mechanics of "operating a store". Following the suggested activities are reproducible student worksheets that can be used for that section. Each worksheet has a heading which identifies its related unit and section and space for student's name, date, and period. Appropriate directions are also provided.

TABLE I

	UNITS				
	I	II	III	IV	V
NUMBERS and OPERATIONS					
Whole Numbers					
Forms Concepts			x		
Adds			x		
Subtracts			x		
Multiplies			x		
Divides			x		
Decimals					
Forms Concepts		x	x		
Adds			x		
Subtracts			x		
Multiplies	x	x	x	x	
Divides		x	x		
Fractions					
Forms Concepts		x			
Adds				x	
Subtracts				x	
Multiplies				x	
Divides		x		x	
Ratio and Proportion		x		x	x
Percent	x	x	x	x	
GEOMETRY					
Geometric Figures					
Sorts		x			x
Recognizes		x			
Identifies and Names		x			
Draws and Constructs					x
Classifies by Properties					x

	UNITS				
	I	II	III	IV	V
GEOMETRIC RELATIONSHIPS					
Organizes into Deductive System		x			x
MEASUREMENT					
Time				x	
Temperature		x			
Linear		x			x
Area		x			x
Volume		x			
Mass		x			
Capacity		x			
Graphing		x			
Statistics	x	x		x	
PROBLEM SOLVING					
Relates Data to Physical Models		x			
Relates Data to Mathematics Sentences		x			
Uses Inductive Procedures		x			x
Organizes and Analyzes Data		x		x	
Draws Conclusions and Checks Them		x			x
Uses Deductive Arguments		x		x	x

UNIT I ORIENTATION
(1 week)

A. Learner Objectives

1. Understands the concept of percent, particularly 100%.
2. Is curious about everything new and asks questions which clarify, relate, or extend ideas.
3. Acquaints oneself with community resources.

B. Pre Test - Administer the Stanford Diagnostic Mathematics Test as a pre test.

C. Class Requirements - Teachers should discuss with their students what is required of them in terms of attendance, attitude, assignments (class and homework, quizzes, and tests), and notebook.

Every class should start with orientation to set some ground rules. The majority of students like to know your grading system. Use this time to introduce the concept of 100% and finding averages.

Base each requirement on 100 points for easier computation. Students like to figure out what they can get for a grade if they score certain numbers. For example:

GRADING SYSTEM

90-100 = A

80-89 = B

70-79 = C

60-69 = D

59-Below = F

A student may score accordingly:

Attendance	100
Class/Homework Average	72
Quiz Average	59
Quarter Test	65
Notebook	95
	391 ÷ 5 = 78 (C)

Use the following samples and worksheets for some of the suggested activities.

D. Use of the Telephone and Directory -- Teachers should use the directory to locate part of Oahu by using the prefix of a telephone number, to find the zip codes of Honolulu and other communities, to find the zip code from the street address, and to compute cost of making a phone call.

Use the following samples and worksheets for some of the suggested activities.

NAME_____

DATE_____

PERIOD_____

UNIT I B Class Requirements

Directions: Compute the average and give a letter grade for each of the students below:

1. Albert

Attendance	95
Class/homework	63
Quiz average	73
Quarter test	53
Notebook	90

2. Carolyn

Attendance	50
Class/homework	75
Quiz average	55
Quarter test	80
Notebook	25

3. Robert

Attendance	85
Class/homework	90
Quiz average	95
Quarter test	92
Notebook	100

4. Linda

Attendance	100
Class/homework	70
Quiz average	60
Quarter test	55
Notebook	95

NAME_____

DATE_____

PERIOD_____

UNIT I D Use of the Telephone and Directory

Objective: To use the directory to locate part of Oahu by using the prefix of a telephone number.

Directions: Turn to page 12A in the green section of your 1979 telephone directory and find the city which corresponds to the prefixes of telephone numbers.

Example: 637 Waialua
638 Sunset Beach

1. 438 _____
2. 235 _____
3. 922 _____
4. 293 _____
5. 395 _____
6. 487 _____
7. 941 _____
8. 737 _____
9. 671 _____
10. 841 _____
11. 839 _____
12. 456 _____
13. 521 _____
14. 471 _____
15. 536 _____
16. 696 _____
17. 848 _____
18. 546 _____
19. 373 _____
20. 668 _____
21. 988 _____
22. 955 _____
23. 677 _____
24. 621 _____
25. 623 _____

NAME_____

DATE_____

PERIOD_____

UNIT I D Use of the Telephone and Directory

Objective: To familiarize oneself with the areas of Oahu and their prefixes.

Directions: Locate the area of the cities listed below and list one prefix for the area. Use the map on the next page.
Example: Waialua 637 (shown on the map)

1. Kaneohe _____
2. Waimanalo _____
3. Puunui _____
4. Waipahu _____
5. Nanakuli _____
6. Kailua _____
7. Sunset Beach _____
8. Koko Head _____
9. Ewa _____
10. Makaha _____
11. Kaaawa _____
12. Kalihi _____
13. Mililani _____
14. Aina Haina _____
15. Waianae _____
16. Kahaluu _____
17. Ewa Beach _____
18. Barber's Pt. _____
19. Makakilo _____
20. Pearl City _____
21. Manoa _____
22. Kaimuki _____
23. Aiea _____
24. Wahiawa _____
25. Laie _____
26. Punahou _____
27. Pearl Harbor _____
28. Schofield _____
29. Hickam _____
30. Tripler _____

NAME _____

DATE _____

PERIOD _____

16

NAME_____

DATE_____

PERIOD_____

UNIT I D Use of the Telephone and Directory

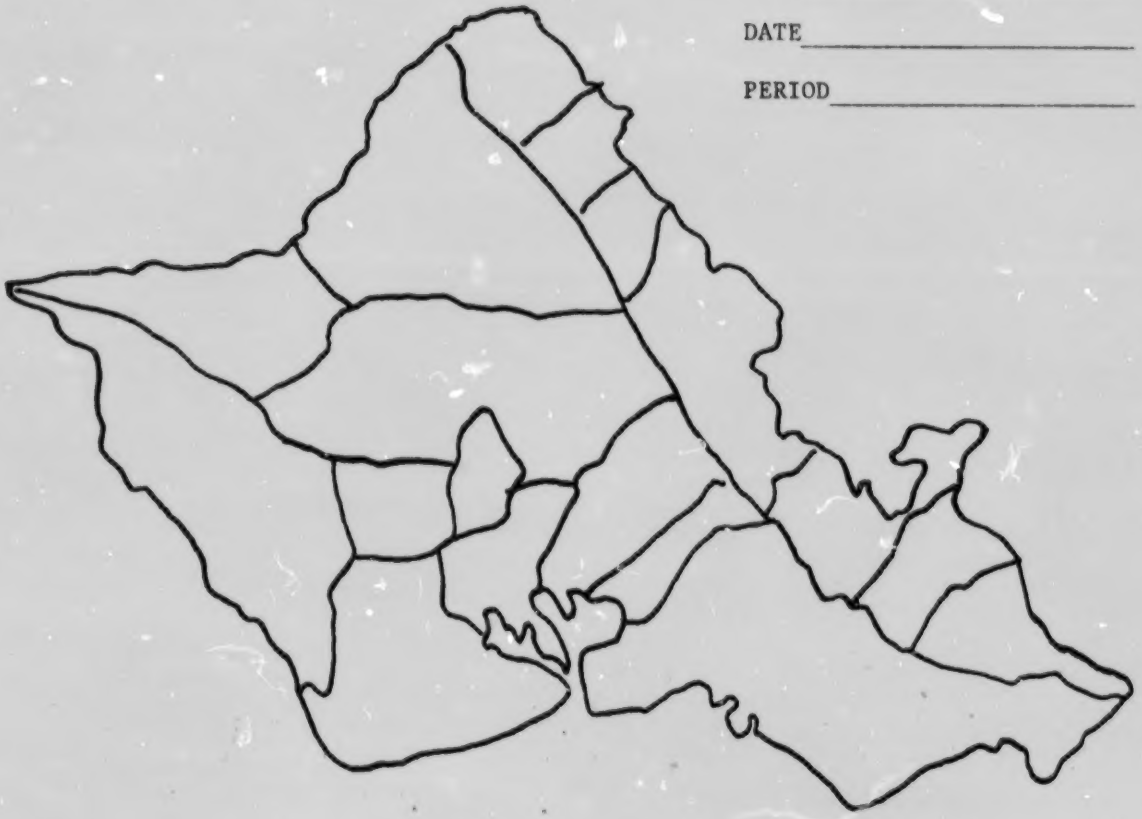
Objective: To familiarize oneself with the areas of Oahu and their first digit prefix.

Directions: Label the section of the island by the first digit prefix; 2, 3, 4, 5, 6, 7, 8, 9.

NAME_____

DATE_____

PERIOD_____



OBJECTIVE: To familiarize oneself with the Oahu Post Offices and Zip codes.

Directions: Label each section and write its zip code.

AIEA	_____	KAHUKU	_____
EWA BEACH	_____	KAILUA	_____
HALEIWA	_____	KANEOHE	_____
HAUULA	_____	KUNIA	_____
HONOLULU	_____	LAIE	_____
KAAAWA	_____	MILILANI TOWN	_____
PEARL CITY	_____	WAIALUA	_____
WAHIAWA	_____	WAIANAE	_____
WAIMANALO	_____	WAIPAHU	_____

NAME_____

DATE_____

PERIOD_____

Use your 1979 Oahu Telephone Directory (page 19A) to find the boundaries for each section of the Honolulu area and write in the zip codes for each section. (Honolulu, Hawaii, 968 + Two digits Shown = Zip Code)

NAME_____

DATE_____

PERIOD_____

UNIT I D Use of the Telephone and Directory

Objective: To use the 1979 telephone directory to find complete mailing addresses.

Directions: Oahu street and zip code guides are found on pages 20A-31A. Find the name of the person or company in the white or yellow pages, then use the guide in the green pages to find the post office and zip code.

Example: Moto Aki (first name on page 25)
719 K N. School (page 30A)
Honolulu, HI, 96817

Use your telephone directory and find the complete mailing address for the first name on the following pages:

30, 40, 50, 100, 125, 200, 250, 300, 325, 333,
350, 421, 447, 469, 559, 581, 650, 653, 663, 667

NAME_____

DATE_____

PERIOD_____

UNIT I D Use of the Telephone and Directory

Objective: To use the telephone directory to compute the cost making a long distance phone call.

Directions: Use pages 2A and 3A to compute long distance calls.

Example: Direct Dial to Texas on Monday at 8:15 AM and conversed for 30 minutes.

Texas is in Band 2.

Direct Dial at 8:15 AM Monday is 77¢ for the first minute and 59¢ each additional minute.

.59	17.11
x 29	+ .77
531	$17.88 + tax
118	
$17.11	

Compute the cost of each of the following calls.

(1) Direct Dial to New York at 6:15 AM on Saturday and talked for 30 minutes.

(2) Operator assisted to Las Vegas at 3:30 PM on Wednesday and talked for 30 minutes.

(3) Operator assisted to Mrs. Brown at XYZ Company in Minnesota at 6:30 AM and talked for 30 minutes.

(4) Direct Dial to Lihue, Kauai at 12 noon on Tuesday and talked for 30 minutes.

(5) Direct Dial to Denver, Colorado at 6:00 AM on Sunday and talked for 30 minutes.

(6) Direct Dial to Alaska at 12 noon on Saturday and talked for 30 minutes.

(7) How much money could you save if you used direct dialing in problem number 2?

NAME_____

DATE_____

PERIOD_____

(8) How much money could you save if you used direct dialing in problem number 3?

(9) What day of the week is the least expensive to make a phone call?

(10) What point determines the rate for a phone call?

UNIT II PURCHASING AND PRICING OF GOODS
(6 weeks)

A. Learner Objectives

1. Organizes and analyzes data by constructing simple graphs or tables.
2. Reads and interprets charts, maps and graphs.
3. Collects and classifies selected data.
4. Makes measurements using a ruler in both customary and metric units.
5. Recognizes and draws common solids.
6. Recognizes and constructs triangles, squares, circles, rectangles and other polygons.
7. Estimates length, area and volume of plane and solid figures.
8. Understands and uses the relationship among common fractions, decimal fractions, and percents.
9. Multiplies and divides decimals.
10. Understands and uses ratios and proportions.
11. Rounds numbers to a designated value.

B. Selection of Goods -- In this section, students learn to make wise decisions regarding what goods should be sold in their store. They learn about customer preferences, they learn to do research about what other similar stores offer, and finally they learn what to consider in their final decision of what stock their store should have. Make good use of the local grocery stores in your community. The managers are very helpful and appreciate the teacher's visit before sending the students on their homework assignments.

1. Review of Skills Needed

   Constructing and reading of bar, circle, broken-line, and picture graphs.

2. Resources

   a. Bernstein, TROUBLE-SHOOTING MATHEMATICS SKILLS, Pages 280-288.

   b. Bolster, MATHEMATICS IN LIFE, Pages 238-244.

   c. Brown, GENERAL MATH Bk 1 Pages 259-290.

   d. Brown, GENERAL MATH Bk 2, Pages 39-61.

   e. Brown, INTRODUCTION TO HIGH SCHOOL MATH, Pages 253-290.

   f. Dublin, BUSINESS MATHEMATICS, Pages 61-65.

   g. Kinney, GENERAL MATHEMATICS, Pages 202-223.

   h. Shaw, GENERAL MATH I, Pages 262-275.

   i. Wiebe, FOUNDATIONS OF MATHEMATICS, Pages 463-479.

3. Suggested Activities

   Use the following samples and worksheets:

NAME_____

DATE_____

PERIOD_____

UNIT II B Selection of Goods

Objective: To make a list of all or as many items as possible in your department.

Directions: Go to the grocery store and make an alphabetical list of all the items in your department. Cut a ditto master of the list and run off about 20 copies for future use.

Example: Grocery Department

<u>Canned Vegetables</u>

Asparagus
Beans - Cut Green
French
Beets
Corn - Cream
Kernel
Lima Beans
Mixed Vegetables
Mushrooms - Buttons
Stems & Pieces
Peas
Peas and Carrots
Sauerkraut
Spinach
Tomato - Catsup Sauce Whole
Paste Stewed
Whole New Potatoes
Yams

NAME_____

DATE_____

PERIOD_____

UNIT II B Selection of Goods

Objective: To interview and make a tally chart of people's preference of items in your department.

Directions: Use your list and interview 30 people. With each person, inform him/her that you are working on a project and would he/she help by answering yes, if the item is in the home; or, no if the item is not in the home. For every yes, make a tally mark (//) by the item.

Example: See Samples 1 & 2.

SAMPLE 1

CANNED VEGETABLES

Asparagus	//	2
Beans - Cut Green	𝍸 𝍸 𝍸 //	17
French	𝍸 //	7
Beets	𝍸 ///	8
Corn - Cream	𝍸 𝍸 𝍸 𝍸	20
Kernel	𝍸 𝍸 𝍸 𝍸 𝍸 𝍸	30
Lima Beans	/	1
Mixed Vegetables	𝍸	5
Mushrooms - Button	//	2
Stem & Pieces	𝍸 𝍸 𝍸 𝍸	20
Peas	𝍸 𝍸 𝍸 /	16
Peas and Carrots	𝍸 𝍸 𝍸 𝍸 /	21
Sauerkraut	//	2
Spinach	//	2
Tomato - Catsup	𝍸 𝍸 𝍸 𝍸 𝍸 𝍸	30
Paste	𝍸 𝍸 𝍸 𝍸 𝍸 /	26
Sauce	𝍸 𝍸 𝍸 𝍸 𝍸	25
Stewed	𝍸 𝍸 𝍸 𝍸 𝍸 ////	29
Whole	𝍸 𝍸 ///	13
Whole New Potatoes	/	1
Yams	𝍸 𝍸 𝍸 //	17

SAMPLE 2

CEREALS

All Bran	𝍸 /	6
Apple Jack	𝍸 𝍸 /	11
Cheerios	𝍸 𝍸 𝍸 𝍸 /	21
Cocoa Krispies	𝍸 𝍸 ////	14
Corn Flakes	𝍸 𝍸 𝍸 𝍸 𝍸 //	27
Corny Snaps	///	3
Cracklin Bran	𝍸 𝍸 /	11
40% Bran	//	2
Froot Loops	𝍸 𝍸 𝍸 //	17
Frosted Flakes	𝍸 𝍸 𝍸 𝍸 𝍸 ///	28
Frosted Mini Wheats	𝍸 ///	8
Frosted Rice	///	3
Handi-Pak	𝍸 𝍸 𝍸 𝍸 //	22
Jumbo Assortment	𝍸 𝍸 𝍸 𝍸 ///	23
Most	/	1
Product 19	𝍸 /	6
Quaker Oats (Quick)	𝍸 𝍸 𝍸 𝍸 ////	24
Raisin Bran	𝍸 𝍸 𝍸 𝍸 ////	24
Rice Krispies	𝍸 𝍸 𝍸 𝍸 𝍸 ///	28
Snack Pack	𝍸 𝍸 𝍸 𝍸 ///	23
Special K	𝍸 𝍸 𝍸 ///	18
Sugar Corn Pops	𝍸 𝍸 𝍸 ///	18
Sugar Smacks	𝍸 𝍸 𝍸 𝍸 //	22
Toasted Mini Wheat	///	3
Total	𝍸 ////	9
Trix	𝍸 𝍸 𝍸 //	17
Wheaties	𝍸 𝍸 𝍸 𝍸 𝍸 /	26
Variety Pack	𝍸 𝍸 𝍸 𝍸 //	22

NAME_____

DATE_____

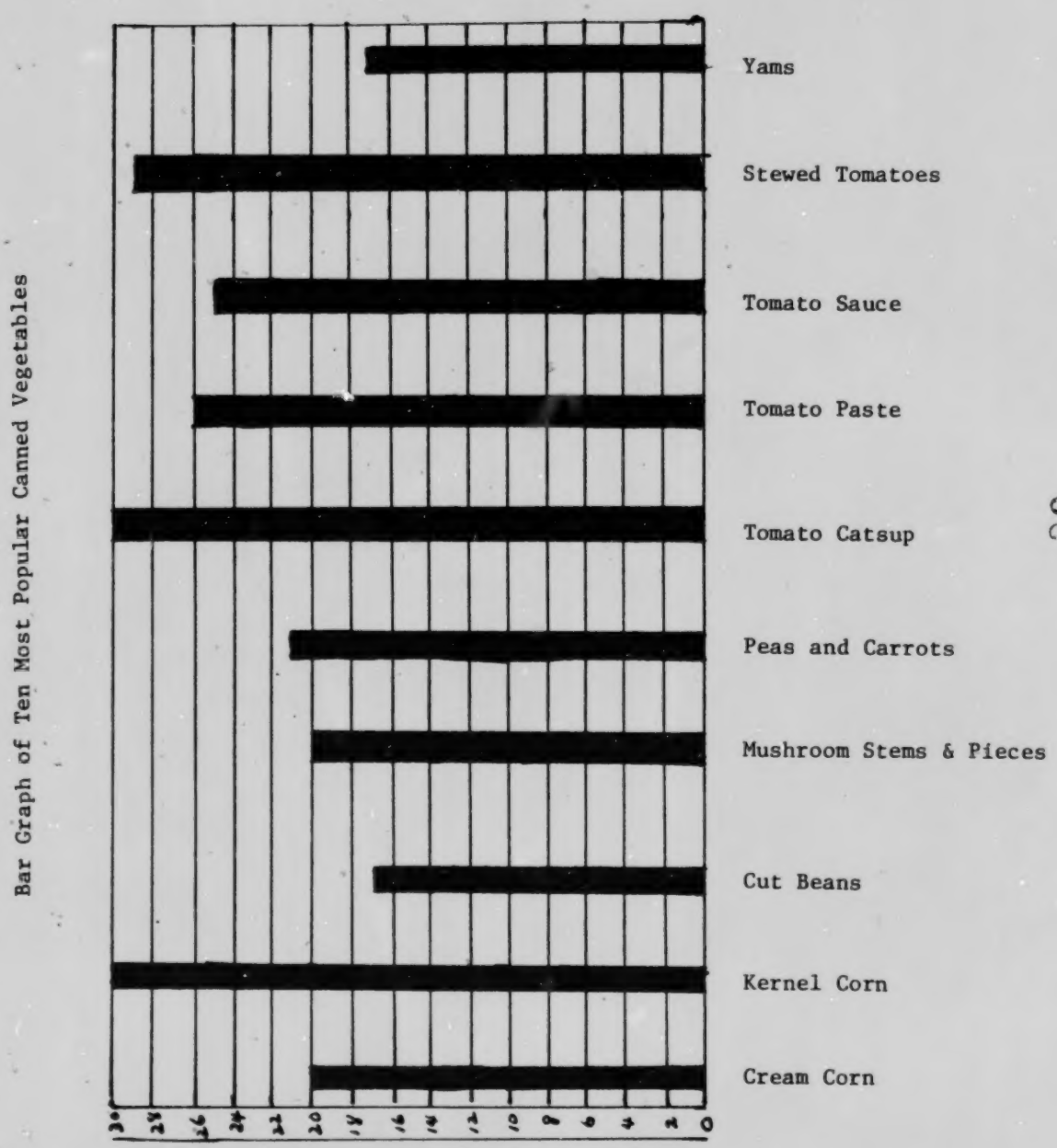
PERIOD_____

UNIT II B Selection of Goods

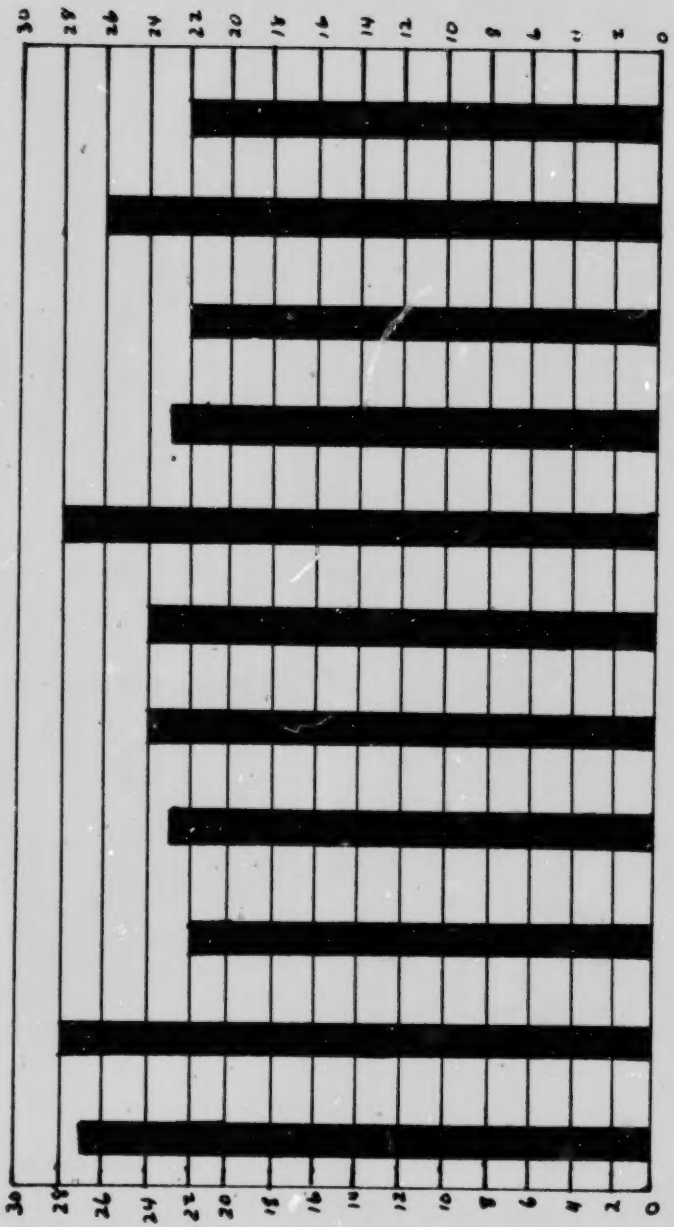
Objective: To construct a bar graph.

Directions: Construct a bar graph of the ten most popular items.
Example: See Graphs 1 & 2.

GRAPH 1


Bar Graph of Ten Most Popular Canned Vegetables
Yams
Stewed Tomatoes
Tomato Sauce
Tomato Paste
Tomato Catsup
Peas and Carrots
Mushroom Stems & Pieces
Cut Beans
Kernel Corn
Cream Corn
0
Number of Students

GRAPH 2



Bar Graph of Eleven Most Popular Cereals

NAME_____

DATE_____

PERIOD_____

UNIT II B Selection of Goods

Objective: To compare the students' graphs of popular items with the grocery stores' popular items.

Directions: Use a prepared ditto sheet and go to the grocery store. Record the different sizes of each item and count the number stocked for each item.

Example: Cereals

Corn Flakes	18 oz.	12 oz.	8 oz.
	10 boxes	12 boxes	15 boxes
Froot Loops	15 oz.	11 oz.	7 oz.
	12 boxes	8 boxes	15 boxes

Is there a correlation between your graph and the items stocked in your grocery store?

NAME_____

DATE_____

PERIOD_____

UNIT II B Selection of Goods

Objective: To make a decision using collected data.

Directions: Make a list of ten items you would select to put on your grocery shelf. Bring each item to class.

Example: Canned Vegetables

- Cream Corn
- Kernel Corn
- Cut Beans
- Mushrooms - Stems & Pieces
- Peas & Carrots
- Tomato Catsup
- Tomato Paste
- Tomato Sauce
- Stewed Tomatoes
- Yams

NAME_____

DATE_____

PERIOD_____

UNIT II B Selection of Goods

Objective: To keep a record of selected items.

Directions: Make an inventory of selected items in your department and cut a ditto master to keep for future use.

Example: Canned Vegetables Cream Corn	Amount Needed	On hand	Order
Canned Soups Chicken Noodle			
Canned Meat Spam			

C. Location of Wholesale Vendors -- In this section, students learn to use the telephone directory as a reference for getting addresses for wholesale vendors. Then they have to use a map to locate the actual location of the vendor.

1. Review of Skills Needed

   a. Use of the yellow pages

   b. Use of the green pages/zip codes from street addresses

   c. Map reading

2. Suggested Activities

   Use the following worksheets:

NAME_____

DATE_____

PERIOD_____

UNIT II C Location of Wholesale Vendors

Objective: To acquire the telephone number and address for wholesale vendors.

Directions: Use the yellow pages of the telephone directory and make a list of companies, addresses and phone numbers needed for future reference.

Example: GROCERY DEPARTMENT
Grocers - Wholesale
Certified Corporation
2888 Ualena
Honolulu, 96819
Phone: 836-0488

NAME_____

DATE_____

PERIOD_____

UNIT II C Location of Wholesale Vendors

Objective: To familiarize oneself with the location of the wholesale vendors.

Directions: Acquire a map of Honolulu and the various districts. Locate each vendor on the map.

D. Pricing the Goods -- In this section, students learn to find the wholesale and retail cost of selected items. They also learn how to find the unit cost of an item (from the wholesale and retail prices) and how to find the percent of markup of an item from wholesale to retail.

1. Review of Skills Needed

   a. Percent

      1) Meaning

      2) Interchanging percent and decimals

      3) Using percents

      4) Finding what percent one number is of another number

      5) Finding a number from its percent of another number

      6) Finding the original price

      7) Finding a part of a number

      8) Finding a number from its part

   b. Decimals

      1) Meaning

      2) Multiply

      3) Divide

2. Resources

   a. Percent

      1) Berstein, TROUBLE-SHOOTING MATHEMATICS SKILLS, Pages 310-329.

      2) Bolster, MATHEMATICS IN LIFE, Pages 213-223.

3) Brown, GENERAL MATHEMATICS Bk I, Pages 213-239.

4) Brown, GENERAL MATHEMATICS Bk 2, Pages 113-120.

5) Brown, INTRODUCTION TO HIGH SCHOOL MATHEMATICS, Pages 213-239.

6) Couzins, ESSENTIAL OF MATHEMATICS, Pages 308-339.

7) Kinney, GENERAL MATHEMATICS, Pages 344-373.

b. Decimals

1) Berstein, TROUBLE-SHOOTING MATHEMATICS SKILLS, Pages 116-144.

2) Bolster, MATHEMATICS IN LIFE, Pages 83-104.

3) Brown, GENERAL MATHEMATICS Bk I, Pages 143-158, 161-164.

4) Brown, GENERAL MATHEMATICS Bk 2, Pages 176, 185-189.

5) Couzins, ESSENTIAL OF MATHEMATICS, Pages 222-257.

6) Kinney, GENERAL MATHEMATICS, Pages 34-67.

7) Shaw, GENERAL MATH I, Pages 54, 55, 58-63, 86-89.

8) Shea, WORKING WITH NUMBERS, Pages 56-60, 66-76.

3. Suggested Activities

Use the following worksheets:

NAME_____

DATE_____

PERIOD_____

UNIT II D Pricing the Goods

Objective: To find the cost of selected items.

Directions: Use your ditto sheet, cross out the items you are not using in your grocery store. Go to a super market and price each size for each item.

Example: See Sample 3.

Go to a neighborhood store and price each size for each item. Write none if the item is not in the store.

SAMPLE # 3

CEREALS

Apple Jack	15 oz.	11 oz.	
	$2.09	$1.69	
Cheerios	10 oz.	7 oz.	
	$1.19	$ .85	
Corn Flakes	18 oz.	12 oz.	8 oz.
	$1.39	$1.05	$ .75
Froot Loops	15 oz.	11 oz.	7 oz.
	$1.89	$1.49	$ .99
Frosted Flakes	15 oz.	10 oz.	
	$1.49	$1.05	
Product 19	17 oz.	12 oz.	8 oz.
	$1.99	$1.59	$1.09
Quaker Oats (Quick)	42 oz.	18 oz.	
	$1.69	$ .89	
Raisin Bran	25 oz.	15 oz.	11 oz.
	$2.19	$1.49	$1.19
Rice Krispies	16 oz.	10 oz.	6 oz.
	$1.75	$1.19	$ .77
Special K	15 oz.	11 oz.	7 oz.
	$1.89	$1.49	$.99

NAME_____

DATE_____

PERIOD_____

UNIT II D Pricing the Goods

Objective: To find the wholesale price of some items.

Directions: Call a wholesale company, identify yourself as a student working on a class project and ask if they can help you with some information. If the company will not help you, say "Thank You" and hang up courteously. If the company will help, select five items from your list and inquire how the items are sold and the price of the items. Be sure to thank the person for his/her time.

Example:	Apple Jack	15 oz.- 24/cs	$36.00
		11 oz.- 24/cs	$24.00

42

NAME_____

DATE_____

PERIOD_____

UNIT II D Pricing the Goods

Objective: To compute the unit cost of wholesale price of some items.

Directions: Use the price from the wholesale company and compute unit cost.

Step 1: Compute cost per item. Divide the number of items into cost.

```
  1.50          $1.50
24)36.00
  24
  120
  120
    0
    0
```

Step 2: Compute unit cost per item, round to the nearest tenth of a cent.

```
  .10
15)1.50
  1 5
    0
    0
```

NAME_____

DATE_____

PERIOD_____

UNIT II D Pricing the Goods

Objective: To find the percent of mark up of each item.

Directions: To find the mark up of each item, divide the wholesale unit price into the retail unit price of each item. Change the decimal to percent. Subtract 100% from your answer to get the percent of mark up.

Example: Retail unit cost 13.9¢

Wholesale unit cost 10.0¢

$$\frac{1.39}{10)13.90} = 139\%$$

$$\begin{array}{r} 10 \\ \hline 39 \\ 30 \\ \hline 90 \end{array}$$

$$\begin{array}{r} 139\ \% \\ -100\ \% \\ \hline 39\ \% \end{array} \text{ mark up}$$

14

NAME_____

DATE_____

PERIOD_____

UNIT II D Pricing the Goods

Objective: To compute unit cost of selected items.

Directions: Use the previous worksheets and compute the unit cost of each size of item by dividing the size into the price of the item. Round off the answer to the nearest tenth of a cent.

Example: Apple Jack 15 oz $2.09 11 oz $1.69

$$15\overline{)2.0900} = .1393 = 13.9¢/oz$$

$$11\overline{)1.6900} = .1536 = 15.4¢/oz$$

E. Measuring the Goods -- In this section, students will learn how to measure the goods to determine how much space is needed for each item in English and metric measure. They will find the total area needed to stock selected items and they will find the volumes of selected items in both English and metric measure.

1. Review of Skills Needed

a. Fractions

1) Meaning

2) Finding equivalent fractions

3) Simplifying fractions

4) Multiplying

5) Dividing

b. Measurement

1) Reading a ruler and meter

2) Obtaining approximate length

3) Using common measures

4) Computing area

a) Quadrilaterals

b) Circles

c) Triangles

d) Other polygons

5) Computing volume

a) Cubes

b) Cylinder

c) Pyramids

d) Sphere

e) Prisms

f) Cones

2. Resources

a. Fractions

1) Bernstein, TROUBLE-SHOOTING MATHEMATICS SKILLS, Pages 195-209, 228-244.

2) Bolster, MATHEMATICS IN LIFE, Pages 131-150.

3) Brown, GENERAL MATHEMATICS Bk 1, Pages 119-169.

4) Brown, GENERAL MATHEMATICS Bk 2, Pages 153-168.

5) Brown, INTRODUCTION TO HIGH SCHOOL MATHEMATICS, Pages 119-169.

6) Couzins, ESSENTIALS OF MATHEMATICS, Pages 188-221.

7) Kinney, GENERAL MATHEMATICS, Pages 116-159.

8) Shaw, GENERAL MATH 1, Pages 97-127, 161-191.

9) Shea, WORKING WITH NUMBERS, Pages 26, 27, 30, 43-53.

b. Measurement

1) Bernstein, TROUBLE-SHOOTING MATHEMATICS SKILLS, Pages 148-187.

2) Bolster, MATHEMATICS IN LIFE, Pages 323-360.

3) Brown, GENERAL MATHEMATICS Bk 1, Pages 13, 16, 119-126.

4) Brown, GENERAL MATHEMATICS Bk 2, Pages 280-345.

5) Brown, INTRODUCTION TO HIGH SCHOOL MATHEMATICS, Pages 312-327.

6) Couzins, ESSENTIALS OF MATHEMATICS, Pages 258-305.

7) Kinney, GENERAL MATHEMATICS, Pages 228-275, 312-343.

8) Shaw, GENERAL MATHEMATICS, Pages 38-61, 166-189, 249-317.

9) Shea, WORKING WITH NUMBERS, Pages 107-134.

10) Wiebe, FOUNDATIONS OF MATHEMATICS, Pages 276-438.

3. Suggested Activities

Use the following worksheets:

NAME_____

DATE_____

PERIOD_____

UNIT II E Measuring the Goods

Objective: To find the space needed for each item in English measure.

Directions: Measure the outside of each cubic and/or cylindrical container in English measure. Using the formula $V = lwh$ or $V = \pi r^2 h$, find the space needed for each item. Round off to the nearest cubic inch.

Example: Canned Tuna

$d = 3\text{-}3/8"$

$h = 1\text{-}3/4"$

$$V = \frac{\overset{11}{\cancel{22}}}{\underset{1}{\cancel{7}}} \times \frac{27}{16} \times \frac{27}{16} \times \frac{\overset{1}{\cancel{7}}}{\underset{2}{\cancel{4}}} = \frac{8019}{512} \approx 16 \text{ cu } "$$

NAME_____

DATE_____

PERIOD_____

UNIT II E Measuring the Goods

Objective: To find the space needed for each item in metric.

Directions: Measure the outside of each cubic and/or cylindrical container in metric. Using the formula $V = lwh$ or $V = \pi r^2 h$, find the spaces needed for each item. Round off to the nearest cubic cm.

Example: Canned Tuna

$d = 8.5$ cm

$h = 4.5$ cm

$V = 3.14 \times 4.25 \times 4.25 \times 4.5 \approx 255\ cm^3$

NAME_____

DATE_____

PERIOD_____

UNIT II E Measuring the Goods

Objective: To find area needed to stock each item.

Directions: Go to the grocery store and measure the length and width of that portion of the item touching the shelf in both English measure and metric. Do this for each of the ten items selected. Compute the total area used for each item.

Example: English measure

Apple Jacks -- 15 oz.

length -- 15 in.

width -- 18 in. (size of shelf)

Total area -- 18 x 15 = 270 sq. in.

Metric

length = 38.1 cm

width = 45.7 cm

Total area 45.7 x 38.1 = 1,741.17 cm^2

NAME_____

DATE_____

PERIOD_____

UNIT II E Measuring the Goods

Objective: To find the capacity of each rectangular or cylindrical item in English measure.

Directions: Measure the inside of each rectangular and/or cylindrical container in English measure. Using the formula $V = lwh$ or $V = \pi r^2 h$, find the capacity of the item. Round to the nearest cu in.

Example: Canned Tuna

$d = 3\text{-}5/16$ in.

$h = 1\text{-}9/16$ in.

$$V = \frac{22}{7} \times \frac{53}{32} \times \frac{53}{32} \times \frac{24}{16} = \frac{772475}{57344} \approx 13 \text{ cu in.}$$

NAME_____

DATE_____

PERIOD_____

UNIT II E Measuring the Goods

Objective: To find the capacity of each rectangular or cylindrical item in metric.

Directions: Measure the inside of each rectangular and/or cylindrical container in metric. Using the formulas $V = lwh$ or $V = \pi r^2 h$ find the capacity of the item. Round to the nearest cm^3.

Example: Canned Tuna

$d = 8.3$ cm

$h = 3.9$ cm

$V = 3.14 \times 4.15 \times 4.15 \times 3.9 \approx 211\ cm^3$

NAME_____

DATE_____

PERIOD_____

UNIT II E Measuring the Goods

Objective: To find the volume of the container in both English and metric.

Directions: Using the previous assignments, subtract the volume of the item from the volume of the space needed to find the volume of the container.

Example: Canned Tuna - English

16 cu " (See page 43)
- 13 cu " (See page 46)

3 cu "

Canned Tuna - Metric

255 cm^3 (See page 44)
- 211 cm^3 (See page 47)

44 cm^3

UNIT III BOOKKEEPING
(5 weeks)

A. Learner Objectives

1. Adds, subtracts, multiplies, and divides whole numbers and decimals.
2. Estimates sums, differences, products and quotients.
3. Explores shortcuts in basic algorithmic operations.
4. Rounds numbers to a designated value.
5. Investigates mechanical devices for computing.
6. Understands and uses the relationship between common fractions and decimal fractions.
7. Solves simple equations in one unknown.

B. Banking Procedures -- In this section, students will learn about the various services a bank can offer. They will learn how to use the different services (such as learning how to use a checking account) and the cost of the service, if any.

1. Review of Skills Needed
   a. Checking Accounts
      1) Filling out deposit slips
      2) Writing checks
      3) Filling out check registers
      4) Reconciling a bank statement
   b. Savings Accounts
      1) Filling out deposit slips
      2) Withdrawing funds

3) Computing interest

a) simple

b) compound

c. Other Services

2. Resources

a. Checking Accounts

1) Bernstein, TROUBLE-SHOOTING MATHEMATICS, pp. 356-359.

2) Bolster, CONSUMER AND CAREER MATHEMATICS, pp. 88-96.

3) Brown, GENERAL MATHEMATICS Bk. 1, pp. 446-455.

4) Brown, GENERAL MATHEMATICS Bk. 2, pp. 563-569.

5) Dublin, BUSINESS MATHEMATICS, pp. 134-135.

6) Goe, CONSUMER MATHEMATICS, pp. 303-316.

7) Meyer, CONSUMER AND BUSINESS MATHEMATICS, pp. 19-30.

8) Olson, BUSINESS AND CONSUMER ARITHMETIC, pp 59-62.

b. Savings Accounts

1) Bolster, CONSUMER AND CAREER MATHEMATICS, pp. 98-103.

2) Brown, GENERAL MATHEMATICS Bk. 1, pp. 476-485.

3) Brown, GENERAL MATHEMATICS Bk. 2, pp. 521-533.

4) Dublin, BUSINESS MATHEMATICS, pp. 108-119.

5) Goe, CONSUMER MATHEMATICS, pp. 283-302.

6) Guthrie, BUSINESS MATHEMATICS for the CONSUMER, pp. 131-145.

7) Kinney, GENERAL MATHEMATICS, pp. 422-424.

8) Meyer, CONSUMER AND BUSINESS MATHEMATICS, pp. 31-39.

9) Olson, BUSINESS AND CONSUMER ARITHMETIC, pp. 49-58.

10) Shaw, GENERAL MATH I, pp. 230-239.

3. Suggested Activities

a. Checking Accounts

1) Use 2 class periods for Buying and Selling - SWAP MEET

a) First Day: GROCERY and MEAT departments are sellers and PRODUCE and DRUGS departments are buyers. The students are to keep records of all items sold or bought, and how they are paid for future assignments. If play money is available, use that for cash. Blank checks may be obtained from a bank, or may be made up using the department title.

b) Second Day: PRODUCE and DRUGS departments are sellers and GROCERY and MEAT departments are buyers. Again, students are to keep records of all transactions.

2) Use the following sample worksheets

b. Savings Accounts

1) Arrange with a bank to allow your students to open a passbook savings account. If the bank is in walking distance, arrange for a field trip to the bank. Once a week, set aside 15 minutes of class time as Banking Time. At this time, students may make deposits only. Withdrawals are to be made with the bank only.

2) Use the following sample worksheets

c. Other Services - use sample worksheets

NAME_____

DATE_____

PERIOD_____

UNIT III B Banking Procedures

Objectives: To inquire about various checking account services.

Directions: Go to two (2) banks and see their customer consultants. Inquire about the following costs of checking accounts:

BUSINESS: Service charge_____

Cost per check_____

Other costs_____

PERSONAL: Service charge_____

Cost per check_____

Other costs_____

Describe the procedure for opening an account:

Do both banks have the same available services?

How about conveniences?

NAME _____

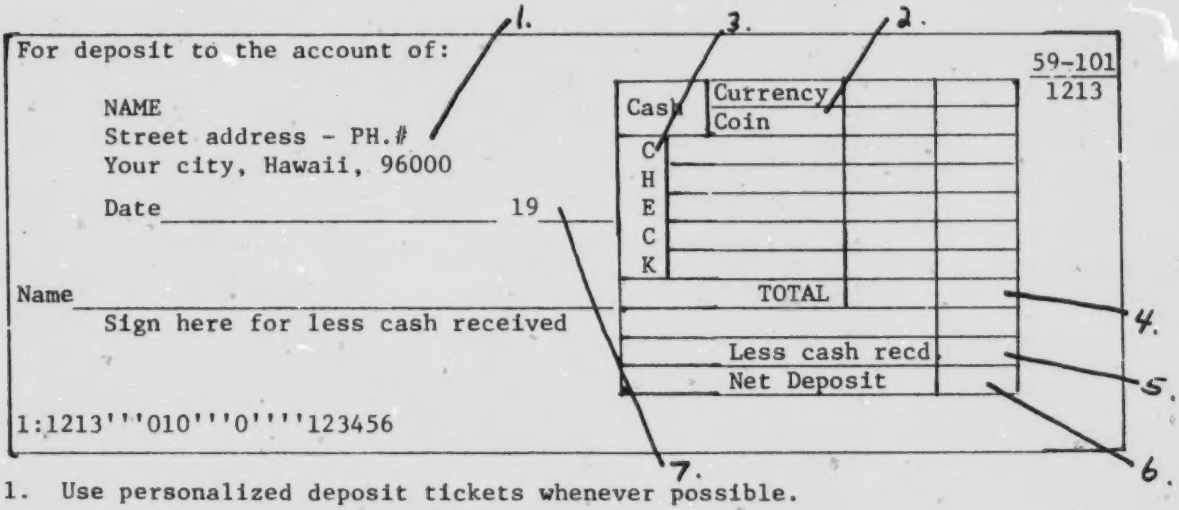
DATE _____

PERIOD _____

UNIT III B Banking Procedures

Objective: To learn to fill out a deposit slip for a checking account.

Directions: Use your totals from your sales at the SWAP MEET and fill in deposit slips for each transaction. Each customer is a transaction.



1. Use personalized deposit tickets whenever possible.
2. Enter currency (FEDERAL RESERVE NOTES) and coin amounts on the deposit ticket.
3. List checks by the ABA number. Additional space is provided on the back of the deposit ticket.
4. Total the deposits and enter here.
5. If you are receiving cash as part of your deposit transaction, enter the amount here and sign for the cash received.
6. Subtract line 5 from line 4 and enter total net deposit here.
7. Enter date on date line.
8. Present the deposit slip to the teller and he/she will furnish you a receipt.

NAME_____

DATE_____

PERIOD_____

UNIT III B Banking Procedures

Objective: To learn to write a check

Directions: Turn to page 13 in your * Programmed Math, Book II - Advanced Personal Math and continue the program to page 34.

*A Sullivan Associates Program from McGraw-Hill Book Company, 1968.

NAME_____

DATE_____

PERIOD_____

UNIT III B Banking Procedures

Objective: To write checks

Directions: Use your totals from your purchases at the SWAP MEET and pay each department with checks. Make a separate check for each transaction.

C1

NAME _____

DATE _____

PERIOD _____

UNIT III B Banking Procedures

Objective: To learn to keep a check register and reconcile a bank statement.

Directions: Turn to page 35 in your *Programmed Math Book II - Advanced Personal Math and continue the program to page 54.

*A Sullivan Associates Program from McGraw-Hill Book Company, 1968.

NAME_____

DATE_____

PERIOD_____

UNIT III B Banking Procedures

Objective: To compute costs of business checking accounts.

Directions: Use these charges to compute the service charge for a business account.

$2 per month
7½¢ for each check
12¢ credit for each $100 average monthly balance

Example: XYZ Company wrote 15 checks for the month of August and had an average monthly balance of $236. What was the service charge for August?

$ 2.00	.075
+ 1.13	x 15
3.13	375
- .24	75
$ 2.89	1.125 = 1.13

(service charge for August)

1. ABC Solar System wrote 21 checks for the month of September and had an average monthly balance of $1,036. What was the service charge for September?
2. Alphabet Soup Company wrote 13 checks for the month of May and had an average monthly balance of $802. What was the service charge for May?
3. Math Apple Company paid their 120 employees by checks for the month of February and had a balance of $1236 to pay the following companies on February 28:

Core Company	$48.00
Seed Company	386.00
Sweet Limited	94.20

What was the service charge for the month of February if their average monthly balance was $2,048?

4. Numbers Company did not write any checks for the month of April and had an average monthly balance of $360. What was the service charge for April?

C4

NAME_____

DATE_____

PERIOD_____

UNIT III B Banking Procedures

Objective: To compute costs of personal checking accounts.

Directions: Use these charges to compute the service charge for personal accounts.

$2.00 a month
No Charge: Maintain a $100 average monthly balance
Direct deposit of your paycheck
$2.50 one time charge to order unique design checks.

Example: Albert Bank wrote 15 checks for the month of June and had an $89 average monthly balance. What was his service charge for the month of June? $2.00

1. Dean Surfer deposits $100 into his checking account each time he cashes his check. During the month of October he wrote 10 checks and maintained a $110 average monthly balance. What was his service charge for the month of October?
2. Boogie Consumer has his government check assigned to his bank. In November he paid all of his bills with his surfer design checks. What was his service charge for November?
3. Master Savings has his Social Security check sent to the bank every month. On February 2nd, he found that he was running low on checks so he ordered the eagle design checks and received them on February 15. He wrote 8 checks and maintained a $150 monthly average balance. What was his service charge for February?

NAME_____

DATE_____

PERIOD_____

UNIT III B Banking Procedures

Objective: To inquire about various savings plans.

Directions: Go to two (2) banks and see their customer consultants. Inquire about various savings plans and the interest rates.

Passbook Savings Account:

Fixed-time Savings Account:

Time Certificates of Deposit:

Bank Bonds:

Savings Bonds:

Christmas Club:

Others:

C6

NAME_____

DATE_____

PERIOD_____

UNIT III B Banking Procedures

Objective: To inquire about other services a bank may offer.

Directions: Go to two (2) banks and see their customer consultants. Inquire about what services other than checking and savings accounts the bank may offer:

Automatic banking:

Pass card:

Loans:

Mortgage:

Trust:

Others:

C. Accounts Receivable -- In this section, the students will learn to tabulate and record the monies received daily. These monies are called daily receipts.

1. Review of Skills Needed--Keeping the daily receipts provides a means of keeping track of the accounts receivable.

2. Resources

   a. Bolster, CONSUMER AND CAREER MATHEMATICS, pp. 328-331

   b. Daily newspapers: preferably Wednesdays

      1) Honolulu Advertiser
      2) Honolulu Star-Bulletin

3. Suggested Activities

   a. Use the records from Buying and Selling days to tabulate daily receipts.

   b. Use the newspaper to tabulate daily receipts--see worksheet that follows.

NAME_____

DATE_____

PERIOD_____

UNIT III C Accounts Receivable

Objective: To tabulate and record monies received.

Directions: Use the foods section of your daily newspaper and select 15 items to purchase. List them and record the amount needed to purchase the items. Be sure to add the 4% State sales tax.
Each student do 5 purchases, each total is a daily receipt, and fill out deposit slips.
Keep for future use.

69

D. Accounts Payable -- In this section, the student will learn about "invoices". They will learn to read and write purchase authorization and invoice forms. They will learn about wholesaler's cash discounts and how to compute the actual cost of buying on "credit". They will find the interest rate and interest charge using the simple interest formula and how to compute monthly payments on loans.

1. Review of Skills Needed

a. Invoice

1) Filling in purchase orders

2) Buying retail

3) Buying wholesale

4) Paying on terms

b. Consumer Credit

1) Using credit cards

2) Using charge accounts

3) Buying on installment

4) Using credit unions

5) Financing companies

2. Resources

a. Invoice

1) Dublin, BUSINESS MATHEMATICS, pp. 75-79

2) Guthrie, BUSINESS MATHEMATICS for the CONSUMER, pp. 121-130.

3) Meyer, CONSUMER AND BUSINESS MATHEMATICS, pp. 1-18

4) Olson, BUSINESS and CONSUMER ARITHMETIC, pp. 113-120

b. Consumer Credit

1) Bolster, CONSUMER and CAREER MATHEMATICS, pp. 108-126

2) Brown, GENERAL MATHEMATICS Book 2, pp. 577-585

3) Dublin, BUSINESS MATHEMATICS, pp. 128-131

4) Guthrie, BUSINESS MATHEMATICS for the CONSUMER, pp. 155-164

5) Goe, CONSUMER MATHEMATICS, pp. 241-282

6) Olson, BUSINESS and CONSUMER ARITHMETIC, pp. 113-120

3. Suggested Activities

a. Invoicing

1) Make a class purchase order to use for making purchases from wholesale companies.

2) Inventory goods and fill out purchase orders to restock.

3) Make a class invoice for class use.

4) Use the following sample worksheet.

b. Consumer Credit - use the following worksheets

NAME_____

DATE_____

PERIOD_____

UNIT III D Accounts Payable

Objective: To read and write purchase authorization forms.

Directions: Take an inventory of goods in your department.
Fill out a purchase order to restock the goods.

Example:_____ Department_____

_____ Purchaser_____

_____ Date_____

Quantity		Items	Unit Cost	Total
4	cs.	Passion-orange drink	$2.40	$ 9.60
2	cs.	Creamed Corn	$7.20	$14.40

NAME_____

DATE_____

PERIOD_____

UNIT III D Accounts Payable

Objective: To read and write invoices.

Directions: Use the purchase order form to make an invoice of items to be purchased. The invoice is to include:

- Name and address of purchaser
- An invoice number
- Date
- Items bought, unit & total cost
- Total of the invoice - include ¼% wholesale tax
- Terms

Send the wholesale company a check for the amount due.

NAME_____

DATE_____

PERIOD_____

UNIT III D Accounts Payable

Objective: To learn to compute cash discounts

Directions: To encourage buyers to make a payment as quickly as possible, wholesalers offer cash discounts. Terms 3/10, n/30 mean that the buyer will have a 3% discount if payment is made within 10 days. If the buyer does not wish to pay quickly, he/she must pay the full amount within 30 days.

Answer the following problems:

Example: On April 5, goods were sold for $450, terms 3/15, n/30.

1. By what date must the items be paid to get the discount? April 5 + 15 days is April 20.
2. How much is the cash discount?

$$\begin{array}{r} \$450 \\ \times .03 \\ \hline \$13.50 \text{ cash discount} \end{array}$$

3. How much must the buyer pay if payment is made on April 15?
4. What is the last date for payment without the discount? May 5

April 5	-	April 30	25 days
May 1	-	May 5	5 days
			30 days

For each of the problems, answer the following questions:

a. By what date should payment be made to obtain a cash discount?

b. How much is the cash discount?

c. How much must the buyer pay if the discount is taken?

d. On what date is payment due in full if the discount is not taken?

	Date of Sale	Terms	Amount
1.	August 19	2/10, n/30	$ 500.00
2.	August 19	3/15, n/30	375.00
3.	July 1	2/15, n/30	360.00
4.	February 8	3/10, n/30	462.00
5.	December 19	2/10, n/60	125.00
6.	May 12	3/15, n/30	235.00
7.	March 21	2/10, n/60	658.50
8.	June 26	3/15, n/60	956.50
9.	December 8	2/10, n/60	1521.00
10.	April 22	3/10, n/60	1250.00

NAME _____

DATE _____

PERIOD _____

UNIT III D Accounts Payable

Objective: To compute dollar cost of credit.

Directions: Find the dollar cost of credit for each of the following problems.

Example: A loan of $525 is paid back in 10 monthly payments of $55 cash. How much does the borrower pay for credit?

$55 x 10 = $550
- 525
$ 25 Dollar cost of credit

Find the dollar cost of credit:

1. A radio for $39.95 cash purchased at $4 a month for 11 months.
2. A bicycle for $129.95 purchased at $12 a month for 1 year.
3. A television set for $179.95 cash purchased at $23.95 for 9 months.
4. A 1970 Volkswagon for $1,000.00 cash purchased at $70 a month for a year and a half.
5. A cash register for $795.95 cash purchased at $110 a month for 8 months.

NAME _____

DATE _____

PERIOD _____

UNIT III D Accounts Payable

Objective: To compute interest charge using the simple interest formula.

Directions: Using the formula i = p r t, find the interest charge on the following problems. In this formula "i" is the interest; "p" is the principal or amount borrowed, "r" is the rate at which the interest is to be paid; "t" is the time for which the money is borrowed.

Example: Mr. Brown borrowed $200 and repaid the loan in 1 month at a rate of 3% per month. What was the amount of interest paid?

$200
x.03
$6.00 - interest paid

Find the amount of interest for each loan:

1. $250 loan with interest at 1% a month repaid at the end of 3 months.
2. $500 loan with interest at 5% a month repaid at the end of 2 months.
3. $1000 loan with interest a 12% a year repaid in 2 years.
4. $60 loan with interest at 2% a month repaid at the end of one month.
5. $450 loan with interest at 5% a month repaid at the end of 5 months.

NAME_____

DATE_____

PERIOD_____

UNIT III D Accounts Payable

Objective: To find interest rate using the simple interest formula.

Directions: Using the formula $r = \frac{i}{pt}$, find the rate of interest for the following problems.

Example: A $300 loan was repaid in a single payment at the end of 4 months with an interest charge of $18. What was the monthly rate?

$$r = \frac{18}{300 \times 4} = \frac{18}{1200} = .015, \text{ or } 1\tfrac{1}{2}\%.$$

Find the monthly interest rate for each single payment loan:

1. $300 loan for 6 months with an interest charge of $30.
2. $500 loan for 3 months with an interest charge of $15.
3. $1000 loan for 8 months with an interest charge of $40.
4. $1500 loan for 3 months with an interest charge of $90.
5. $1500 loan for 1 month with an interest charge of $30.

NAME_____

DATE_____

PERIOD_____

UNIT III D Accounts Payable

Objective: To compute monthly payments on loans.

Directions: Use your invoices on goods to be purchased.

Compute:
1. Total cost of merchandise to get a loan.
2. Use a simple interest rate of 18½% to be repaid in 2 years.
3. Find the monthly payments.

Solution: Loan x .185 = interest
(Loan + interest) ÷ 12 = monthly payments

Keep this for a monthly expense to be added in Unit IV.

UNIT IV EXPENSES
(5 weeks)

A. Learner Objectives

1. Estimates and rounds off numbers to designated values.
2. Adds, subtracts, multiplies and divides decimals.
3. Reads and interprets tables.
4. Solves percent problems.
5. Investigates how and who uses percents.
6. Understands and uses relationship between common, decimal and percent fractions.
7. Understands and uses ratios and proportions.

B. Payroll -- In this section, students learn to compute their earnings, in terms of hourly rates, commission, straight salary, and piecework earnings. The students will work with time sheets and will learn to compute gross earnings. They will also compute annual earnings.

1. Review of Skills Needed
   a. Adding, subtracting, multiplying and dividing fractions.
   b. Computing time
   c. Computing hourly rate
   d. Computing commission
   e. Computing salary
   f. Computing earnings from piecework
2. Resources
   a. Time
      1) Bernstein, TROUBLE-SHOOTING MATHEMATICS SKILLS, pp. 188-190, and 210-244
      2) Bolster, MATHEMATICS IN LIFE, pp. 131-170

3) Bolster, CONSUMER and CAREER MATHEMATICS, pp. 14-19 and 50-53

4) Brown, GENERAL MATHEMATICS Bk I, pp. 127-164 and 409-412

5) Brown, GENERAL MATHEMATICS Bk. 2, pp. 148-169

6) Brown, INTRODUCTION TO HIGH SCHOOL MATHEMATICS, pp. 126-164

7) Couzins, ESSENTIALS OF MATHEMATICS, pp. 90-155, and 188-221

8) Goe, CONSUMER MATHEMATICS, pp. 420-432

9) Olson, BUSINESS and CONSUMER ARITHMETICS, pp. 13-18

10) Shaw, GENERAL MATH 1, pp. 97-184, 289-213

11) Shea, WORKINGWITH NUMBERS, pp. 26-55 and 107-116

12) Wiebe, FOUNDATIONS OF MATHEMATICS, pp. 416-435

b. Others

1) Bernstein, TROUBLE-SHOOTING MATHEMATICS SKILLS, pp. 332-345

2) Bolster, CONSUMER and CAREER MATHEMATICS, pp. 68-86

3) Brown, GENERAL MATHEMATICS Bk. [illegible], pp. 405-434

4) Brown, GENERAL MATHEMATICS Bk. 2, pp. 98-137

5) Dublin, BUSINESS MATHEMATICS, pp. 80-89

6) Goe, CONSUMER MATHEMATICS, pp. 159-1954

7) Guthrie, BUSINESS MATHEMATICS for the CONSUMER, p. 237

8) Kinney, GENERAL MATHEMATICS, pp. 468-478

9) Meyer, CONSUMER and BUSINESS MATHEMATICS, pp. 41-47

10) Olson, BUSINESS and CONSUMER ARITHMETIC, pp. 107-112

11) Shaw, GNERAL MATH 1, pp. 70-90

81

3. Suggested Activities

a. Set up a daily work schedule with a minute wage. You may start at 50¢ per minute and increase 5¢ a week.

b. Give each student a time card each week.

c. Assign the job of timekeeper to a student who will collect the time cards daily for you to check.

d. Use the first 15 minutes of the firstclass period of the week to compute earnings.

e. Use the sample time cards or one similar.

f. Use the following sample worksheets

NAME_____

DATE_____

PERIOD_____

UNIT IV B Payroll

Objective: To compute earnings at an hourly rate

Directions: Use the time sheets on this page and compute the amount earned for the week.

1 minute to 15 minutes late cost the worker 15 minutes.
16 minutes to 30 minutes late cost the worker 30 minutes, etc.
Working hours are from 6:30 AM to 10:30 AM and 11 a.m. to 3 PM.

1. ALFRED

Rate		$3.75/hr.		
	In	Out	In	Out
M	6:30	10:30	11:00	3:00
T	6:41	10:30	11:02	3:00
W	6:30	10:30	11:31	3:00
Th	6:48	10:30	11:00	3:00
F	6:30	10:30	11:00	3:00

2. JOSEPH

Rate		$4.25/hr.		
	In	Out	In	Out
M	6:50	10:30	11:00	3:00
T	6:30	10:30	12:01	3:00
W	7:45	10:30	11:00	3:00
Th	6:30	10:30	11:00	3:00
F	6:31	10:30	11:01	3:00

3. LINDA

Rate		$2.85/hr.		
	In	Out	In	Out
M	6:30	10:30	11:00	3:00
T	6:46	10:30	11:14	3:00
W	6:30	10:30	11:00	3:00
Th	6:30	10:30	11:00	3:00
F	----------			

4. DANIELLE

Rate		$4.38/hr.		
	In	Out	In	Out
M	6:30	10:30	11:00	3:00
T	6:30	10:30	11:00	3:00
W	6:52	10:30	11:00	3:00
Th	6:30	10:30	11:20	3:00
F	6:36	10:30	11:00	3:00

NAME_____

DATE_____

PERIOD_____

UNIT IV B Payroll

Objective: To compute minutes worked from a time sheet.

Directions: Your teacher will give you a time sheet (Sample 4) the first day of each week. Use this time sheet to keep a record of your working minutes in class.

Give your time sheet to the assigned time keeper at the end of each class.

See Sample 5.

SAMPLE 4

NAME				
WEEK				
	IN	OUT	IN	OUT
M				
T				
W				
Th				
F				

NAME				
WEEK				
	IN	OUT	IN	OUT
M				
T				
W				
Th				
F				

NAME				
WEEK				
	IN	OUT	IN	OUT
M				
T				
W				
Th				
F				

NAME				
WEEK				
	IN	OUT	IN	OUT
M				
T				
W				
Th				
F				

SAMPLE 5

NAME Mary Lee

WEEK 9/5 - 9/9

	In	Out	In	Out			
M	10:11	11:01	11:45	12:20	11:01	12:20	
					- 10:11	11:45	
					50	35	= 85 min.
T							
W	9:58	10:30	11:20	11:45	10:30	11:45	
					- 9:58	- 11:20	
					32	25	= 60 min.
Th							
F	10:00	10:33	11:18	11:58	10:33	11:58	
					- 10:00	11:18	
					33	40	= 73 min.
							218 min.

NAME _____

DATE _____

PERIOD _____

UNIT IV B Payroll

Objective: To compute gross earnings

Directions: Use your completed time sheet and compute your gross earnings. Your beginning pay will be 50¢/min. for the first 180 minutes and time and a half will be used for every minute over 180 minutes.

Example: Using Mary Lee's time sheet:

218	180	38
- 180	x .50	x .75
38 overtime	90.00	190
	27.50	266
	117.50	27.50

Mary Lee's gross earning is $117.50

97

NAME _____

DATE _____

PERIOD _____

UNIT IV B Payroll

Objective: To compute hourly rate from gross annual salary.

Directions: Use the classified section of the Sunday newspaper find 10 jobs that advertise an annual salary.

Compute the weekly earning and an hourly rate using a 40 hour work week.

Example: Manager earning $13,000 annually.

```
        250.000
52) 13,000.000
    10 4
     260
     260
```

= $250.00 a week

```
      $6.25
40) 250.00
    240
     100
      80
      200
      200
```

= $6.25 a hour

NAME _____

DATE _____

PERIOD _____

UNIT IV B Payroll

Objective: To compute gross earnings using a salary plus commission.

Directions: Employers use various methods to encourage their employees to do their best. Some firms (especially sales firms) pay a salary plus a commission to their sales people. Compute the gross earnings for the following problems.

Example: George receives a salary of $100 a week plus commission of 10% on sales. If he sold $470 worth of shoes during the week, what was his gross earnings?

$ 100	Salary	10% of $470 = $47.00
+ 47	Commission	
$ 147	Total Earned	

1. Alfred receives a salary of $35 plus a commission of 25% on sales. If he sold $700 worth of beef during that week, what was his gross earnings?
2. Daniel receives a 12% commission only on all of his drug sales to the various Super Markets and Drugstores. Daniel sold $1568 worth of drugs this week. What was his earnings for the week?
3. Jerry receives the commissions:

Sales up to $50	5% commission
Sales in excess of $50 up to $100	8%
Sales in excess of $100	12%

Find his commission during each week:

First week:	Sales	$40
Second week:	Sales	$75
Third week:	Sales	$90
Fourth week:	Sales	$125

If Jerry receives a salary of $100 each week plus his commissions from above, how much did Jerry earn for the four weeks selling hardware?

NAME _____

DATE _____

PERIOD _____

UNIT IV B Payroll

Objective: To compute earnings from piecework.

Directions: Some employers pay their workers according to jobs completed.

Example: Suzie Sewing Company pays a cutter $1.25 for each outfit cut during the day. If the cutter cut 16 outfits on Monday, 15 outfits on Tuesday, 20 outfits on Wednesday, 10 outfits on Thursday and 12 outfits on Friday, how much did the cutter earn?

16	1.25
15	x 73
20	375
10	875
+ 12	$91.25 was the total earned.
73	

Compute the earnings for the following problems:

1. Lisa is paid $9 for each poster used in the Super Market. Lisa made 4 posters for the Produce Department, 3 posters for the Meat Department, 5 posters for the Grocery Deparment and 7 for the Drug Department. Two drug posters were not approved, but the rest were put up in the supermarket. How much did Lisa earn?
2. Karen gets paid 12¢ for each pineapple picked during the day and gets a bonus of 2¢ for each pineapple picked in excess of 1000 for the week. Karen picked 250 pines on Monday, 180 pines on Tuesday, 225 pines on Wednesday, 230 pines on Thursday and 50 pines on Friday. What was her earnings for the week?
3. Thomas gets paid 65¢ a pound for akule, 89¢ a pound for aku and 125 pound akule, 3 akus weighing 25 lb., 55 lb. and 15 lb. and 1 ahi weighing 90 lbs. How much did he earn?

C. Taxes -- In this section, students will compute different types of taxes such as income, property, and sales tax. They will be using tables or using percents to compute these taxes.

1. Review of Skills Needed

   a. Income tax

      1) Federal
      2) State
      3) FICA

   b. Property tax

   c. Sales tax

2. Resources

   a. Bernstein, TROUBLE-SHOOTING MATHEMATICS SKILLS, Pages 374-383.

   b. Bolster, CONSUMER and CAREER MATHEMATICS, Pages 260-279.

   c. Brown, GENERAL MATHEMATICS, BK. I, Pages 418-430.

   d. Goe, CONSUMER MATHEMATICS, Pages 195-240.

   e. Guthrie, BUSINESS MATHEMATICS for the CONSUMER, Pages 212-236.

   f. Kinney, GENERAL MATHEMATICS, Pages 447-457.

   g. Meyer, CONSUMER and BUSINESS MATHEMATICS, Pages 63-86.

   h. Olson, BUSINESS and CONSUMER ARITHMETIC, Pages 89-92.

3. Suggested Activities

   a. Obtain a table from the Federal and State governments to use for computation.

   b. Check requirements for retail license.

   c. Check for method of paying sales tax.

   d. Check with State and/or City about property taxes.

   e. Obtain a table from the Social Security Administration to use for computation.

   f. Use the following sample worksheets.

NAME _____

DATE _____

PERIOD _____

UNIT IV C Taxes

Objective: To read and use tables.

Directions: Use the Federal and State Tax tables to compute the amount of income tax that will be deducted from the gross income that you have computed.

Compute the Social Security tax based on the recent percentage that each person must contribute.

Obtain state income tax information from:

Employer's Tax Guide
State Tax Office
425 South Queen Street
Honolulu, HI 96813

Phone: 548-3270 (Oahu)

Obtain federal income tax and social security tax information from:

Employer's Tax Guide
Internal Revenue Service

Phone: 546-8660 (Oahu)

93

NAME_____

DATE_____

PERIOD_____

UNIT IV C Taxes

Objective: To use percents in computing property tax.

Property taxes are based on assessed valuation. Assessed valuation is 60% of market value. A notice of property assessment is sent to the owner each year showing the value of the building, land and the total value minus exemptions, if any, showing total net taxable.

Directions:
1. Obtain a notice of property assessment from your parents.
2. Call the Department of Taxation at 548-3274 (Oahu) and inquire about the mill levy for the various land classes.
3. Compute the amount of taxes to be paid.

Example: Assessed value of the Browns property is $30,264.
The total mill levy is 41.610 mills per dollar.
Find the amount of their property tax.

Solution: To change mills per dollar to a dollar amount, divide the number of mills per dollar by 1000.

Property Tax = Assessed value x Rate

$$\begin{array}{r} 30,264 \\ \times\ .04161 \\ \hline 30264 \\ 181584 \\ 30264 \\ 121056 \\ \hline 1259.28504 \end{array} = \$1,259.29$$

D. Insurance -- In this section, students will learn about different types of insurance. They will learn about the purpose of each type of insurance and how to obtain information regarding each type of insurance. They will learn to compute how much insurance costs and how much they save because they bought insurance. Finally, they will be able to compute their personal expense after insurance has paid those partial expenses covered by the particular type of policy.

1. Review of Skills Needed
   a. Purpose
   b. Medical
   c. Liability
   d. Property
   e. Contents
   f. Workmen's Compensation
   g. Life
2. Resources
   a. Bernstein, TROUBLE-SHOOTING MATHEMATICS SKILLS, Pages 362-372.
   b. Bolster, CONSUMER and CAREER MATHEMATICS, Pages 280-300.
   c. Brown, GENERAL MATHEMATICS Bk. 2, Pages 492-514.
   d. Dublin, BUSINESS MATHEMATICS, Pages 100-104.
   e. Goe, CONSUMER MATHEMATICS, Pages 331-368.
   f. Kinney, GENERAL MATHEMATICS, Pages 498-503.
   g. Meyer, CONSUMER and BUSINESS MATHEMATICS, Pages 87-102.
   h. Olson, BUSINESS and CONSUMER ARITHMETIC, Pages 81-88, 93-98.
3. Suggested Activities
   a. Invite one or two insurance agents to help with services and cost. From information, students can select insurance needed and compute accordingly.
   b. Inquire about the State Workmen's Compensation Laws.
   c. Use the following sample worksheets.

NAME_____

DATE_____

PERIOD_____

UNIT IV D Insurance

Objective: To obtain pertinent information for insurance.

Directions: Ask your family's insurance agent or one that will visit your class for information and complete each blank.

What is the cost of:

Fire Insurance:

Real Property Insurance:

Personal Property Insurance:

Life Insurance:

Contents Insurance:

Medical Insurance:

NAME_____

DATE_____

PERIOD_____

UNIT IV D Insurance

Objective: To figure amount of money saved repairing a damaged home by obtaining a loan versus having insurance.

Insurance is a pooling of money of a large number of people. When an accident occurs, some of the money is used to help pay some of the costs.

Example: A fire caused $30,000 worth of damage to a home. If the family borrowed the money to repair the house, they must repay the loan at $10 per $1000 of the loan per month over 20 years. If the home had been insured at $200 per year, how much would the owners have saved?

Solution:

30 x $10 = $300 per month
300 x 12 = 3600 annually
3600 x 20 = 72,000 over the 20 years.

At $200 a year, over a 20 year period, they would have paid $4000 for insurance.

Thus they would save

$72,000 (loan)
- 4,000 (insurance)
$68,000 over the 20 years

NAME_____

DATE_____

PERIOD_____

UNIT IV D Insurance

Objective: To obtain information for Medical Insurance.
There are two Medical Plans in Hawaii, Hawaii Medical Services Association and Kaiser Foundation Medical Plan, besides the Insurance Companies.

Directions: Obtain medical plans from both services and compute cost of insurance for your immediate family per month and annually. Make a schedule of benefits for each Plan.

98

NAME _____

DATE _____

PERIOD _____

UNIT IV D Insurance

Objective: To compute hospital and physician expenses with insurance.

Directions: Use your Medical Benefits Schedule to compute the following problems.

1. What is the cost of a room for 90 days at $98 a day?
2. How much will be paid by the insurance plan?
3. Find the cost of a private room for 40 days at $125 a day.
4. How much of this cost will be paid by the insurance plan?
5. Jerry spent 10 days in the hospital for an operation. His room cost $100 a day. The doctor's bill was $500. X-rays cost $42 and the anesthetic cost $95. Other hospital costs totaled $550.00 How much did Jerry pay?

UNIT V SUMMARIZATION
(1 week)

A. Learner Objectives

1. Compiles material for a course notebook.

2. Finds averages for grades received.

B. Post - Test Administer the Stanford Diagnostic Mathematics Test as a post test.

C. Course Notebook -- Students should compile a notebook (see attached worksheet for instructions). They should average all quizzes, classwork, and homework grades (see attached worksheet for instructions). Students can also make a layout and/or model of the chosen department using empty cans or boxes to construct shelf of their goods. This shelf can be a good display for a school fair or office. Students can also make a floor plan of their department to scale or draw a shelf to display in the library or office.

NAME _____

DATE _____

PERIOD _____

UNIT V C Summarization

Directions: Get all of your work done for Math class and arrange them in order of the four (4) units:

I: ORIENTATION
II: PURCHASING AND PRICING OF GOODS
III: BOOKKEEPING
IV: EXPENSES

Include all of the worksheets, scratch paper, quizzes, tests, checkbook, inventory and ledger.

101

NAME_____

DATE_____

PERIOD_____

UNIT V C Summarization

Objective: To compute averages

Directions: Obtain all of your class and homework grades and compute the average. Be sure to include your zeroes (o) for all work not completed.

Compute an average for your quizzes.

Examples: 95, 68, 85, 100, 55, 75, 85, 100, 100, 0, 0, 0.

95
68
85
100
55
75
85
100
100
0
0
0
763

There should be 12 grades, thus:

$$12 \overline{)\,763}\quad 63$$

72
43
36
7

class/homework average is 64

BIBLIOGRAPHY

Following is a list of all texts and workbooks that might be of some use to you. Your basal text may be one or more of the texts listed or you may have some that are not listed.

Textbooks

Bernstein, A & Wells, D., TROUBLE-SHOOTING MATHEMATICS SKILLS, Holt, Reinhart and Winstron, 1979.

Bolster, L., CONSUMER AND CAREER MATHEMATICS, Scott, Foresman and Company, 1978.

Bolster, L., MATHEMATICS IN LIFE, Scott-Foresman and Co., 1977.

Brown, K., et al, GENERAL MATHEMATICS Books 1 and 2, Laidlaw Brother, 1968.

Brown, K., et al, INTRODUCTION TO HIGH SCHOOL MATHEMATICS, Laidlaw Brothers, 1970.

Couzins, H. & Huffman, A., ESSENTIALS OF MATHEMATICS, Silver, Burdett Company, 1976.

Dilley, C & Rucker, W., MATHEMATICS-MODERN CONCEPTS AND SKILLS, Book I, Raytheon Education Company, 1968.

Dilley, C., & Rucker, W., MATHEMATICS-MODERN CONCEPTS AND SKILLS, Book 2, D.C. Heath, 1968.

Dilley, C., & Rucker, W., MATHEMATICS-MODERN CONCEPTS AND SKILLS, Book 3, D.C. Heath and Company, 1974.

Dublin, L., BUSINESS MATHEMATICS, Monarch Press, Seventh Printing, 1975.

Dumas, E & Schminke, C., MATH ACTIVITIES FOR CHILD INVOLVEMENT, Allyn and Bacon, Inc., 1977.

Goe, W., CONSUMER MATHEMATICS, Harcourt Brace Jovanovich, 1979.

Guthrie, M., BUSINESS MATHEMATICS FOR THE CONSUMER, Pitman Publishing, 1975.

Heddens, J., TODAY'S MATHEMATICS, Sience Research Associates, Inc., 1974.

Kramer, SCHOOL MATH, Teacher Editions 7 & 8, Lyons & Carnahan, 1974.

Meyer, R., CONSUMER AND BUSINESS MATHEMATICS, Simon and Schuster, 1974.

Postman, R., GROWTH IN MATHEMATICS - Gold, Harcourt Brace Jovanovich, 1978.

Price, et al, MATHEMATICS FOR THE REAL WORD, Charles E. Merrill, 1978.

Shaw, B., et al, GENERAL MATH #1, Houghton Mifflin Company, 1977.

Sobel, M. & Maletsky, E., ESSENTIALS OF MATHEMATICS, Books 1-4, Ginn & Co., 1973.

Troutman, A. LAIDLAW MATHEMATICS - Gold and Purple Books Laidlaw Brothers 1978.

Wells, Shult, Choate, MATHEMATICS FOR DAILY USE, Laidlaw Brothers, 1977.

Wiebe, A. FOUNDATIONS OF MATHEMATICS, Holt, Rinehart and Winston, Inc. 1968.

Workbooks

Bell, E & Gawronski, J., MASTERING COMPUTATIONAL SKILLS, Level 7,8,9 Scott, Foresman and Company, 1979.

Bolster, L., MATHEMATICS AROUND US - Practice and Activities Workbook, Level 8, Scott, Foresman and Co., 1978.

France, N & Clarke, B. SPECTRUM MATHEMATICS - Green Book, Laidlaw Brothers, 1973.

Olson, M. & McNelly A., BUSINESS AND CONSUMER ARITHMETIC, Prentice-Hall, 1969.

Shea, J., WORKING WITH NUMBERS, Steck-Vaugh Company, 1954.

Sullivan, M., PROGRAMMED MATH, Books 10 and 11, McGraw-Hill Book Company, 1968.